U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

JUL 5 1978

June 30, 1978

COPY

REPLY TO ATTN OF: M/S 530

Superseded on 11/28/79.

Chem-Nuclear Systems, Inc.
P.O. Box 1269
Portland, Oregon 97207

Pursuant to Section 6(e)(1) of the Toxic Substances Control Act (Public Law 94-469), regulations were promulgated in Title 40 of the Code of Federal Regulations, Part 761 (43 Federal Register, 7150 et seq.) setting forth the requirements for the formal approval of chemical waste landfills for the disposal of polychlorinated biphenyls (PCBs). By letter dated March 10, 1978, Chem-Nuclear Systems, Inc. made application to EPA Region X for approval of a PCB disposal site designated as "Trench 5" at a chemical waste landfill located in Sections 25 and 36 T.2.N., R.20E.W.M., Gilliam County, Oregon. The company submitted a technical report as required by Section 761.41(c)(1) and (2).

Public notice of the application was published on May 1, 1978 in the following Oregon newspapers: (a) "The Oregonian" in Portland, (b) "The East Oregonian" in Pendleton, (c) "The Chronicle" in The Dalles. A copy of the notice was also posted in the United States Post Office at Arlington, Oregon. Response to the public notice consisted of one letter stating opposition to the disposal of radioactive materials at the site. No comments were received regarding PCB disposal.

EPA Region X has reviewed the technical report and made a comprehensive review of the supplemental document, "Geological and Subsurface Investigations, Arlington Disposal Site, Gilliam County, Oregon" dated January 29, 1971 by Shannon and Wilson, consulting engineers from Portland, Oregon. In addition, a site visit and evaluation was made on April 21, 1978.

On the basis of the data, reports, and documents submitted and subject to all requirements and conditions of Parts A and C of the attached

Technical and Operational Requirements, approval is hereby granted for PCB waste disposal for the Chem-Nuclear Systems, Inc. disposal site identified as the northerly 150 feet of Trench 5 located in Section 25 T.2N., R.20E.W.M., Gilliam County, Oregon. Please note that violation of the requirements of this approval letter is subject to stringent penalties under the Toxic Substances Control Act.

Dated this 30th day of June, 1978.

Donald P. Dubois
Regional Administrator

Enclosure

cc: William Young

TECHNICAL AND OPERATIONAL REQUIREMENTS

PCB Disposal-Chem-Nuclear Systems, Inc.
Hazardous Waste Disposal Site
Arlington, Oregon

This document sets forth the requirements and conditions that must be met for EPA Region X approval for PCB waste disposal at the Chem-Nuclear Systems, Inc., disposal site identified as the northerly 150 feet of Trench 5 located in Section 25 T.2N, R.20E.W.M., Gilliam County, Oregon. The report is divided into Parts A, B and C. Part A addresses the technical requirement set forth in Section 761.41(b) and includes a determination of whether each specific requirement has been met. Part B addresses waivers granted for specific technical requirements not met in Part A along with the rationale for granting the waiver. Part C sets forth special conditions that must be met to retain approval status.

Part A. Technical Requirements

EPA Region X has determined that the disposal site has met the technical requirements set forth in Section 761.41(b) of Title 40 unless otherwise indicated. Requirements not met are addressed in the waiver section (Part B).

(1) Soils (Section 761.41(b)(1))

Requirement - Landfill sites are to be located in "thick relatively impermeable formations." Where this is not possible, the soil at the site shall meet specific parameters as to thickness, permeability, liquid limit, plasticity index, etc.

Determination - This has been met since the site is located in an area underlain by over 200 feet of soil with permeabilities ranging from 4×10^{-4} to 5×10^{-7} cm/sec. Between the soil and the ground water is a layer of impermeable basalt which confines the ground water under pressure.

(2) Hydrology (Section 761.41(b)(2))

Requirement - The bottom of the landfill must be substantially above the historical high ground water table. Flood plains, shorelands, and ground water recharge areas must be avoided. There can be no hydraulic connection between the site and standing or flowing surface water. The site must have monitoring wells and leachate collection and must be at least 50 feet from the nearest ground water.

Determination - This requirement has been partially met. A deep test well at the site has shown that ground water beneath the site occurs under confined conditions at a depth of about 560 feet. The head on this aquifer creates a piezometric surface about 426 feet below the

surface. Further, there is insufficient natural recharge to develop a continuous, definable local water table. The bottom of the landfill is substantially above the historical high ground water table and is more than 50 feet above the nearest ground water. The site is not located on a flood plain, shoreland or a ground water recharge area and there is no known hydraulic connection between the site and standing or flowing surface water. One of the required monitoring wells and the leachate collection system are waived in Parts B(1) and B(3)(b).

(3) Flood Protection (Section 761.41(b)(3))

Requirement - If the landfill is above the 100-year floodwater elevation the operators shall provide diversion structures capable of diverting all of the surface water runoff from a 24-hour, 25-year storm.

Determination - The disposal site is located above the 100-year floodwater elevation; however, a waiver of the requirement will be granted as discussed in Part B(2).

(4) Topography (Section 761.41(b)(4))

Requirement - The landfill site shall be located in an area of low to moderate relief which minimizes erosion and helps prevent landslides or slumping.

Determination - This requirement has been met.

(5) Monitoring Systems (Section 761.41(b)(5))

(a) Water Sampling

(1) Baseline Data (Section 761.41(b)(5)(i)(a))
Requirement - Ground and surface water from the disposal site shall be sampled for baseline data purposes.

Determination - This requirement has been met since baseline ground water data is available and there is no surface water on the site.

(2) Monthly Sampling (Section 761.41(b)(5)(i)(b))
Requirement - Defined water sources shall be sampled at least monthly when the landfill is being used for PCB disposal operations.

Determination - This requirement will be met and is further addressed in Special Condition 14 in Part C.

(3) Sampling After Closure (Section 761.41(b)(5)(i)(c))
Requirement - Defined water sources shall be sampled indefinitely at a frequency of at least every six months after closure of the site.

Determination - This requirement has been partially waived to require sampling for a maximum of 10 years after closure of the site as is discussed in Part B(3)(a).

(b) Ground Water Monitoring Wells

(1) Monitoring Wells (Section 761.41(b)(5)(ii)(a))
Requirement - Three ground water monitoring wells shall be provided in a line through the center of the disposal site from the area of highest water table elevation to area of lowest water table elevation .

Determination - This requirement will be waived to allow two monitoring wells as is discussed in Part B(3)(b).

(2) Monitor Well Construction (Section 761.41(b)(5)(ii)(b))
Requirement - Monitor wells shall be cased and the annular space cemented with portland cement to prevent percolation of surface water into the well bore.

Determination - This requirement is waived to allow the specifications discussed in Part B(3)(c).

(c) Water Analysis (Section 761.41(b)(5)(iii))
Requirement - Water samples must be analyzed for PCBs, pH, specific conductance, and total chlorinated organics, and data and records maintained as required in Annex VI of 40 CFR, Part 761.

Determination - This requirement will be met as is discussed in Special Conditions 14, 15, and 19 in Part C.

(6) Leachate Collection (Section 761.41(b)(6))

Requirement - A leachate collection and monitoring system shall be installed beneath the landfill and leachate monitored monthly for quantity and quality of leachate produced.

Determination - The leachate collection requirements are waived as is discussed in Part B(1).

(7) Chemical Waste Landfill Operations (Section 761.41(b)(7))

(a) PCB Handling (Section 761.41(b)(7)(i))
Requirement - PCBs shall be handled in a manner to prevent damage to containers and must be segregated from wastes which are not chemically compatible with the PCB containers or the PCBs.

Determination - These requirements will be met as described in Special Conditions 7, 8, 9, and 10 in Part C.

(b) Operations Plan (Section 761.41(b)(7)(ii))
Requirement - An operations plan shall be submitted to EPA for approval.

Determination - Such a plan has been submitted by the applicant Chem-Nuclear Systems, Inc. and is hereby approved.

(c) Records Maintenance (Section 761.41(b)(7)(iii))
Requirement - Records shall be maintained for all PCB disposal operations and must include three-dimensional burial coordinates. Additional records must be maintained as required in Annex VI.

Determination - This requirement will be met as described in Special Conditions 9 and 19 in Part C.

(8) Supporting Facilities (Section 761.41(b)(8))

(a) Fencing (761.41(b)(8)(i))
Requirement - A six foot woven wire fence shall be provided around the perimeter of the site.

Determination - This requirement has been met.

(b) Road Maintenance (761.41(b)(8)(ii))
Requirement - Access and on-site roads shall be maintained in a safe manner.

Determination - This requirement will be met as described in Special Condition 4 in Part C.

(c) Site Operations (761.41(b)(8)(iii))
Requirement - The site shall be operated and maintained in a safe manner.

Determination - This requirement will be met as described in Special Condition 5 in Part C.

Part B. Waivers of Specific Technical Requirements

The following technical requirements under Section 761.41(b) are hereby waived:

(1) Hydrology (leachate collection requirement only) (Section 761.41(b)(2)) and Leachate Collection (Section 761.41(b)(6)).

Requirement - A leachate collection and monitoring system shall be installed.

Determination - The disposal site receives about 10 inches of annual rainfall but has a pan evaporation of about 63 inches per year. In

addition, volcanic tuffs beneath the trenches will act as an absorbing soil column some 200 feet thick to trap any fluids that may leak from the trench. The resulting limited downward movement of water from the trenches will produce no degradation of the ground water reservoir because the reservoir, located at a depth of more than 500 feet, is protected by layers of relatively impermeable basalt. No leachate collection system is deemed necessary.

(2) Flood Protection (Section 761.41(b)(3))

Requirement - For sites located above the 100-year floodwater elevation, diversion structures capable of diverting the surface water runoff from a 24-hour, 25-year storm shall be provided.

Determination - The site is located in the Columbia Plateau basaltic province of north central Oregon and is more than 200 feet above the nearest streambed located in adjacent Alkali Canyon. No flood data is available for this area; however, the disposal site is presumed to be above the 100-year floodwater elevation. Since no runoff occurs in the area of the disposal site, the facility will not be required to construct the specified diversion structures. Occasional rain or snow melt that accumulates in wind-blown depressions either sublimates, evaporates or infiltrates into the shallow soil, usually to be evapo-transpired during the dryer months. Special Condition 12 in Part C addresses the requirement for overland flow diversion.

(3) Monitoring Systems (Section 761.41(b)(5)(i)(c), (ii) (a), & (ii) (b))

(a) Sampling after closure (761.41(b)(5)(i)(c))
Requirement - Defined water sources shall be sampled indefinitely every six months after final closure of the disposal site.

Determination - This requirement is partially waived as sampling every six months for a period of ten years after final closure of the disposal area is deemed adequate. See Special Condition 16 in Part C.

(b) Monitor wells (761.41(b)(5)(ii)(a))
Requirement - Since the underlying earth is impermeable with a uniform slope in one direction, three monitor wells are required that extend from the area of highest water table elevation to the area of lowest water table elevation.

Determination - As indicated in Part A (2), the ground water occurs under confined conditions at a level of 560 feet below the surface. Therefore, two existing wells will provide adequate monitoring. Dry wells (see Part C (15)) below the disposal site will monitor the unsaturated material.

(c) Monitor wells construction (761.41(b)(5)(ii)(b))
Requirement - Monitor wells shall be cased and the annular space cemented with portland cement to prevent percolation of surface water into the well bore.

Determination - The two existing groundwater monitor wells are only partially cased, with portland cement used to cement the bottom of the casing into the underlying basalt. The annular spaces are backfilled with well cuttings from the site. The existing cement and backfill will prevent the movement of surface water down the annular space; therefore, it is not necessary to drill additional wells or to reconstruct the existing wells.

Part C. Special Conditions See 12/08/78 PCB Ltr of Approval Modification

(1) Disposal of PCBs is restricted to the northerly 150 feet of Trench 5, located in SW¼, SE¼, Section 25, T.2.N., R.20. E.W.M., Gilliam County, Oregon. See 12/8/78 mod

(2) Approval of the above described site will continue until January 1, 1980, unless otherwise extended or modified.

(3) Access to the disposal site during normal working hours for the purpose of EPA inspections and sampling conducted pursuant to Section 11 of the Toxic Substances Control Act shall not be denied.

(4) Roads shall be maintained to and on the site which are adequate to operate and maintain the site without causing safety or nuisance problems or hazardous conditions.

(5) The disposal site shall be operated and maintained in a manner to prevent safety problems or hazardous conditions resulting from spilled liquids and windblown materials.

(6) The floor of the trench shall be covered with a one-foot thick layer of charcoal and the charcoal covered with a one-foot layer of earth prior to placement of PCB wastes.

(7) PCB waste shall be buried in the containers in which they are received or stored. Reusable shipping cases will not be required to be disposed of unless PCB leakage has occurred. See 12/8/78 mod

(8) PCB wastes and containers shall be stacked in individual cells within Trench 5. The dimensions of each cell shall not exceed 50 feet by 50 feet by 7 feet in height. In no event shall PCB containers be dumped or pushed into the site from the lip of the trench.

(9) The exact location of each waste and the dimensions of each cell shall be permanently recorded with respect to a permanent, surveyed reference monument. The contents of each cell shall also be recorded in facility records. Such records shall include three dimensional burial coordinates.

(10) No wastes, other than PCB wastes, shall be placed in the northerly 150 feet of Trench 5, with the exception that non-liquid wastes that are chemically compatible with PCBs may be placed above the uppermost PCB cells. All waste will be buried at least three feet below the natural land surface.

Chemical compatibility shall be determined solely by EPA Region X upon written application made by the operator for each planned disposal of wastes alleged to be chemically compatible with PCBs. Such application shall include a description of the chemical components in the waste, the quantity of the waste to be disposed, and the method of disposal. Applications shall be addressed to the Region X Solid Waste Management Program. In addition, a permanent record of the type and quantity of non PCB wastes shall be maintained.

(11) With the exception of PCBs contained in capacitors or nonremovable residual liquids in other PCB containers, no other liquid waste, whether containerized or not, shall be disposed in Trench 5 unless a relatively impermeable dike, having a width of at least 10 feet, is placed between the PCB disposal area and the remainder of Trench 5.

(12) The land surface around Trench 5 shall be graded or trenched to prevent any overland runoff from flowing into the PCB landfill.

(13) Upon final closure of the northerly 150 feet of Trench 5, it shall be covered with a layer of compacted earth which extends a minimum of three feet below the natural land surface.

(14) The two ground water monitor wells (the site water well and the office water well) shall be sampled monthly and analyzed for the following parameters:

a. PCBs
b. pH
c. Specific Conductance
d. Total Chlorinated Organics
e. Chlorides

Prior to obtaining a sample from each well, the well shall be pumped to remove the volume of liquid initially contained in the well. This volume of water shall be handled such that it does not enter Trench 5 and does not violate applicable state or Federal discharge standards.

(15) Test wells B_3, B_4, B_7, and B_8, shown on attachment B to the technical

report submitted by Chem-Nuclear System, Inc. on March 10, 1978, and the three observation wells in Trench 5 shall be checked monthly for the presence of liquid in the well bore. If any liquid is detected, a sample shall be taken and analyzed for the following parameters:

a. PCBs
b. pH
c. Specific Conductance
d. Total Chlorinated Organics
e. Chlorides

(16) The two ground water wells (the site water well and the office water well) shall be sampled on a frequency of no less than once every six months for a period of ten years after final closure of the disposal site and the samples analyzed as required in Special Condition 14.

(17) Sampling methods and analytical procedures for the parameters specified in Special Condition 14 shall be as described in 40 CFR Part 136 as amended in 41 FR 52776 on December 1, 1976. In addition, any laboratory performing chemical tests for the operator of the disposal site shall be participating in EPA's Quality Assurance Program for analytical quality control.

(18) All monitoring results obtained in compliance with Special Conditions 14, 15, and 16 shall be submitted monthly to the Solid Waste Management Program, EPA Region X, M/S 630, 1200 Sixth Avenue, Seattle, Washington 98101.

(19) All data and the records of sampling and analysis shall be maintained as required in Annex VI (b) (40 CFR 761.45(b)).

(20) The operator of the disposal site shall immediately report to the Regional Administrator any detection of PCBs in the samples obtained in compliance with any of the monitoring requirements Special Condition 14, 15, and 16.

(21) The monthly report specified in Special Condition 18 shall include a summary of any spilled PCB material received during the month. The summary should include the spilled material source, the shipper and the quantity delivered.

NOTICE

Pursuant to section 15(1) and 16(a) of TSCA, [15 USCA §§ 2614 and 2615(a)] the recipient hereof is advised that penalties not to exceed $25,000 per day may be administratively assessed for any failure to comply with requirements of this document imposed by the authority of, or the regulations prescribed pursuant to, section 6(e) of the Toxic Substances Control Act [15 USCA § 2605(e)].